

use or cannot get unrationed foods, it shall issue to him one or more certificates for the number of points necessary to get the additional processed foods he needs during the next two months."

The application form referred to above, OPA Form R-315, is apt to be somewhat confusing to patients. It is titled "Sugar Special Purpose Application" and was developed primarily to meet the need for home canning. It is being used temporarily, until a more adequate form can be gotten out.

It is anticipated that the procedure indicated in Section 2.5 above may be changed somewhat in the future, in which case due notice will be provided.

## ARMY NEEDS OFFICERS WITH SPECIALIZED MEDICAL TRAINING

**Help the Army Secure these Officers.**—On March 27th, a telephone message was received from the "San Francisco Officer Procurement Service" of the United States Army, through Mark C. Elworthy, Major, AUS, Officer in Charge, with the request that publicity be given to an official bulletin showing some current needs of the Surgeon General's Office.

Readers are requested to call to the attention of persons, who may be qualified, the need of enrollment for the various positions mentioned.

The text of the bulletin follows:

### ARMY NEEDS OFFICERS WITH SPECIALIZED TRAINING

The Army is looking for trained specialists in the fields of Lay Hospital Administration, Biochemistry, Parasitology, Bacteriology, Medical Entomology, Medical Photography, and Sanitary Engineering.

In each of these fields properly qualified men may be commissioned as officers, usually in the grade of First Lieutenant, but in some cases in both lower and higher grades. The minimum necessary qualifications in the different classifications are:

#### *Lay Hospital Administrators*

Ages 25 to 50.

Three years' experience as a superintendent, Assistant Superintendent, director or business manager of a hospital of at least 100 beds.

#### *Biochemists*

Ages 25 to 59.

A high degree of skill in the field of clinical biochemistry. A Bachelor's degree in biochemistry plus four years' experience in medical biochemistry or a Master's degree plus two and one-half years' experience, or a Ph.D. degree plus one year of experience.

A knowledge of toxicology.

#### *Nutrition Officers*

Ages 25 to 59.

Educational background and training in physiology, biochemistry or nutrition are preferred. Men with an educational background of zoology, pathology, botany, food chemistry, animal husbandry or agricultural sciences will be considered provided they have had a reasonable number of courses in physiology and/or nutrition and/or biochemistry or have done research involving the effects of food and diet upon living organisms. Men with a Ph.D. or M.A. degree plus one year's experience, or B.A.'s or B.S.'s with four years' experience in the field of nutritional research or related subjects will be considered.

Male dieticians will be considered providing they have the necessary scientific background.

#### *Bacteriologists*

Ages 25 to 59.

A knowledge of medical bacteriology, including methods of isolation of pathogenic bacteria and their identification and routine sanitary bacteriologic analysis of water and milk. College graduation plus four years' experience in medical bacteriology, or a Master's degree plus two and one-half years' experience, or a Ph.D. degree plus one year of experience.

#### *Medical Entomologists*

Ages 25 to 59.

Approximately four years' experience in the field of medical entomology.

Four years of college work leading to a Bachelor's degree in the field of medical entomology from a recognized institution. Training must have been along the lines of public health and must have included courses in medical entomology, medical bacteriology, medical protozoology and arthropod ecology and classification. The receipt of a Master's degree in entomology may be substituted for one and one-half years' experience and a Ph.D. or equivalent degree with a major in medical entomology may be substituted for three of the four years of experience.

#### *Medical Photographers*

Ages 25 to 59.

College graduation in a related field.

Four years' experience in medical photography. An advanced degree in a related field may be substituted for part of the required experience.

#### *Sanitary Engineers*

Ages 25 to 59.

Approximately four years' experience in sanitary and public health engineering including two of the following activities:

Mosquito Control, Rodent Control, Water Supply, Sewage Treatment.

A Bachelor's degree in Civil, Sanitary or Chemical Engineering. The receipt of a Master's degree may be substituted for one and one-half years of the required experience and a Ph.D. degree for three of the required years.

Men on the active or reserve list of the United States Public Health Service are not eligible.

In all these classifications the draft status of applicants is immaterial and men classified for *limited service only* will be accepted.

Applicants who are interested and sincerely believe themselves fully qualified under the specifications, should address inquiries to the Officer Procurement District Office nearest their home.

Offices in the State of California are located as follows:  
San Francisco Officer Procurement District, Room 328 Flood Building, 870 Market Street, San Francisco, California.

Los Angeles Officer Procurement District, 1418 United States Post Office and Courthouse Building, Los Angeles, California.

## CALIFORNIA LEGISLATURE IS IN SESSION

**Public Health Legislation Proposed at Sacramento.**—Readers who may not have noticed the report, are requested to turn to pages 134-137 of the March number of CALIFORNIA AND WEST-

ERN MEDICINE,' and glance over the very large list of proposed laws which have relation to the interests of Public Health and Medical Practice.

A rapid survey of the long list there given, cannot do other than impress one with the heavy tasks which confront the C.M.A. Committee on Public Policy and Legislation in its work. (Doctor Dwight H. Murray, of Napa, Chairman.)

Physicians have cause to be grateful that the medical profession contains colleagues who are willing to interfere with the routine of their own busy, professional lives, and give wholehearted service to conserve and promote the best interests of scientific and organized medicine.

Fortunately, this 55th California Legislature will not be called upon to consider, as a "must-pass measure," a compulsory health insurance act. That does not mean, however, that the proponents of such legislation have given up the battle. On the contrary, it may be safely assumed that they are quietly marshalling their forces, to attain the same objectives, without resort to open battle. Wherefore, it behooves the medical profession to be as much on the alert, as in the past.

## EDITORIAL COMMENT†

### COMPLEXITY OF SERUM COMPLEMENT

The time is rapidly approaching when physicians and laboratory technicians must familiarize themselves with the clinical implications of the newer knowledge of the chemical nature of "alexin" or "serum complement." A typical example of recent advances is contained in a report by Pillemer<sup>1</sup> and his coworkers of the Institute of Pathology, Western Reserve University, of the four complementogenic factors active in specific serum hemolysis.

About fifty years ago it was shown by Buchanan, Bordet and others that cytolytic serums are inactivated if heated to 56° C for 30 minutes, and that such heated serums can be reactivated by the addition of normal serum. The nonspecific thermolabile factor or group of factors in normal serum bringing about this reactivation was named "alexin" by Bordet, and "serum complement" by Ehrlich. This thermolabile component or group of components was pictured by both investigators as a pan-immunizing defensive enzyme, causing lysis of bacteria or erythrocytes "sensitized" by the thermostable specific immune body ("amboceptor"). Complement, therefore, was assumed to be a single chemical substance, presumably protein in nature. This assumption has determined the terminology and clinical logic for the last half century.

The first serious challenge to this unitarian concept was about thirty years ago, when it was shown by a number of serologists that complement can be separated into two components, a globulin and an albumin fraction. Neither of these substances is in itself active, but full activity can

be restored by reuniting these two proteins in their original proportions. Alexin or complement thus became a complex globulin-albumin conjugate, a globulin fraction ("mid-piece") capable of uniting directly with sensitized cells, to which was attached an albumin fraction ("end-piece"), incapable of direct union. Both "mid-piece" and "end-piece" were apparently denatured by heat.

This concept of complement as two conjugated proteins had little or no effect on clinical logic. A third essential complementogenic factor, however, was subsequently demonstrated by Coca,<sup>2</sup> who found that complement can be inactivated by adsorption or absorption on yeast, without injury to either the mid-piece or end-piece. After yeast inactivation the serum can be fully reactivated by addition of the thermostable fraction of normal serum. Ten years later a fourth essential complementogenic factor was demonstrated by Gordon,<sup>3</sup> a heat-stable component removed, destroyed or denatured by treatment with ammonia or ammonium salts.

Numerous possible clinical applications of the new complement components were implied in studies of the "hereditary absence of complement" in certain strains of guinea pigs. These strains are hyper-susceptible to practically all microbic infections, and can be reared only with most scrupulous hygienic care. It was shown by Hyde<sup>4</sup> that this hereditary serum deficiency is due solely to a lack of the third or yeast-adsorbed complement component, the other complementogenic factors being both qualitatively and quantitatively normal. Incidentally, Hyde showed that this third component does not pass through the placenta, that its lack of formation is due to a single recessive gene, and that failure to allow for the third component in heat-inactivated sera may introduce serious errors in routine clinical diagnosis.

Since then numerous biochemists have attempted to determine the method of action of each of the four recognized complementogenic components. A simplified terminology was suggested by Pillemer, Heidelberger<sup>5</sup> and others: C'1, C'2, C'3, and C'4 in place of the "mid-piece," "end-piece," "third component," and "fourth component" of earlier investigators. Pillemer and his colleagues found no evidence that any one of these components is able to unite directly with specific antibody ("amboceptor"), nor with non-sensitized cells. After "amboceptor" enters into primary combination with the red cells, however, the surface of the resulting antiserum-cell aggregate has a selective affinity for C'1, C'2 and C'4. C'1 is able to combine directly with these sensitized cells, while C'4 does not combine in the absence of C'1. C'1, therefore, apparently functions as a secondary sensitizer. Although C'1 is essential for C'4 absorption, an excess of C'1 may block absorption and thus function as an anti-complement.

The latest electrophoretic diagrams<sup>5</sup> suggest that C'1 and C'2 each consists of a mixture of four or more proteins, the essential fraction in each complex being still undetermined. After